

How Reference Architectures support the evolution of Product Families; the Darwin research project

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Abstract

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1 Introduction

Products in product families are often derived from a common platform. The platform is a means to re-use past knowledge and efforts. Many successful platforms exist, from cell phones and televisions, to cars and airplanes. However, most of the platforms are successful in more mature markets, where change is mostly extension and (cost) optimization. Platform strategies struggle more in dynamic environments where continuously many changes are imposed on the products. When the organization size also grows beyond a critical mass, then the platform strategy hits the next obstacle: (over) specialization of project members and practical limits of communication between all project members.

Our hypothesis is that Reference Architectures improve the capability to evolve platform based product families when the organization size has exceeded the critical boundary imposed by interpersonal communication. Reference Architectures start to capture the essence of the Business and Technical Architectures of past systems. Based on strategy, vision and future stakeholder needs Reference Architectures are adapted to facilitate future products. Our hypothesis is based on the communication value of Reference Architectures. A compact set of artefacts that together form a Reference Architecture can more easily be shared by large teams that create platforms and products. Reference Architectures make relationships and key design decision explicit, which supports the reasoning about high-impact changes.

2 Acknowledgements

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References

- [1] Gerrit Muller. The system architecture homepage. <http://www.gaudisite.nl/index.html>, 1999.

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- added annotation to product families item added set based design

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- added high level problem statement
- updates to add configuration diversity

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